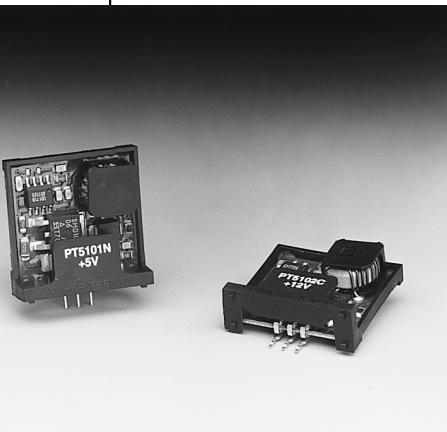


## PT5120 Series

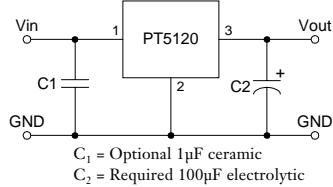
1 AMP LOW VOLTAGE INPUT  
INTEGRATED SWITCHING REGULATOR

SLTS080

(Revised 6/4/98)



## Standard Application



- Low Voltage Input (7V)
- 85% Efficiency
- Internal Short-Circuit Protection
- Over-Temperature Protection
- Laser-Trimmed Output Voltage

The PT5120 series is a low voltage input (typically 7V) version of Power Trends' easy-to-use, 1A positive step-down, 3-terminal Integrated Switching Regulators (ISRs). These ISRs are designed with premium low-threshold FETs for those power regulation applications requiring very low input/output voltage differentials such as battery powered equipment.

## Pin-Out Information

Pin	Function
1	V <sub>in</sub>
2	GND
3	V <sub>out</sub>

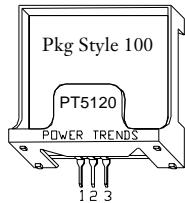
## Ordering Information

PT5121□ = + 5 Volts  
PT5123□ = + 3.3 Volts

## PT Series Suffix (PT1234X)

## Case/Pin Configuration

Vertical Through-Hole	N
Horizontal Through-Hole	A
Horizontal Surface Mount	C



## Specifications

Characteristics (T <sub>a</sub> =25°C unless noted)	Symbols	Conditions	PT5120 SERIES			
			Min	Typ	Max	Units
Output Current	I <sub>o</sub>	Over V <sub>in</sub> range	0.1*	—	1.0	A
Short Circuit Current	I <sub>sc</sub>	V <sub>in</sub> = V <sub>in</sub> min	—	3.5	—	Apk
Input Voltage Range	V <sub>in</sub>	0.1 ≤ I <sub>o</sub> ≤ 1.0 A	V <sub>o</sub> = 3.3V V <sub>o</sub> = 5V	7 7	— 38	V V
Output Voltage Tolerance	ΔV <sub>o</sub>	Over V <sub>in</sub> Range, I <sub>o</sub> = 1.0 A T <sub>a</sub> = 0°C to +60°C	—	±1.5	±3.0	%V <sub>o</sub>
Line Regulation	Reg <sub>line</sub>	Over V <sub>in</sub> range	—	±0.5	±1.0	%V <sub>o</sub>
Load Regulation	Reg <sub>load</sub>	0.1 ≤ I <sub>o</sub> ≤ 1.0 A	—	±0.5	±1.0	%V <sub>o</sub>
V <sub>o</sub> Ripple/Noise	V <sub>n</sub>	V <sub>in</sub> =V <sub>in</sub> min, I <sub>o</sub> =1.0 A	—	±2	—	%V <sub>o</sub>
Transient Response with C <sub>o</sub> = 100uF	t <sub>tr</sub> V <sub>os</sub>	25% load change V <sub>o</sub> over/undershoot	— —	100 5.0	200	μSec %V <sub>o</sub>
Efficiency	η	V <sub>in</sub> =9V, I <sub>o</sub> =0.5A, V <sub>o</sub> =3.3V V <sub>in</sub> =9V, I <sub>o</sub> =0.5A, V <sub>o</sub> =5V	— —	82 85	— —	% %
Switching Frequency	f <sub>o</sub>	Over V <sub>in</sub> and I <sub>o</sub> ranges, V <sub>o</sub> =3.3V V <sub>o</sub> =5V	575 500	725 650	875 800	kHz
Absolute Maximum Operating Temperature Range	T <sub>a</sub>		—	—	+85	°C
Recommended Operating Temperature Range	T <sub>a</sub>	Free Air Convection, V <sub>o</sub> =3.3V (40-60LFM) V <sub>o</sub> =5V	-20 -20	— —	+80** +80**	°C
Thermal Resistance	θ <sub>ja</sub>	Free Air Convection (40-60LFM)	V <sub>o</sub> = 3.3V V <sub>o</sub> = 5V	— —	45 50	— —
Storage Temperature	T <sub>s</sub>		—	—	+125	°C
Mechanical Shock		Per Mil-STD-883D, Method 2002.3 1 msec, Half Sine, mounted to a fixture	—	500	—	G's
Mechanical Vibration		Per Mil-STD-883D, Method 2007.2 20-2000 Hz, Soldered in a PC board	—	5	—	G's
Weight			—	4.5	—	grams

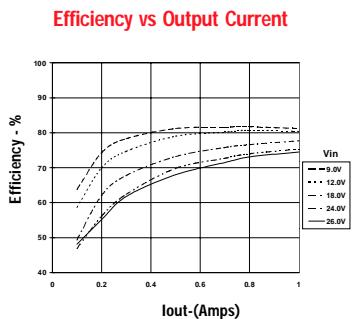
\* ISR will operate down to no load with reduced specifications.

\*\*See Thermal Derating chart.

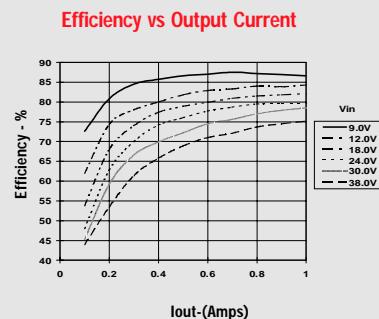
**Note:** The PT5120 Series requires a 100uF electrolytic or tantalum output capacitor for proper operation in all applications.

## CHARACTERISTIC DATA

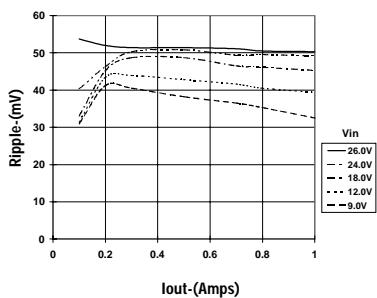
PT5123, 3.3 VDC (See Note 1)



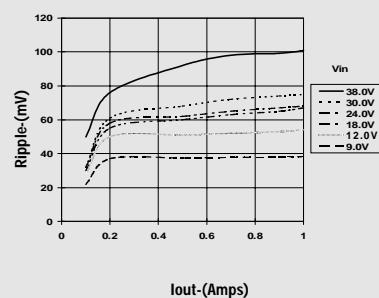
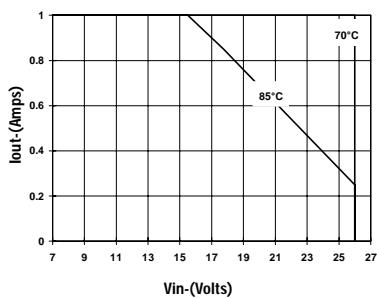
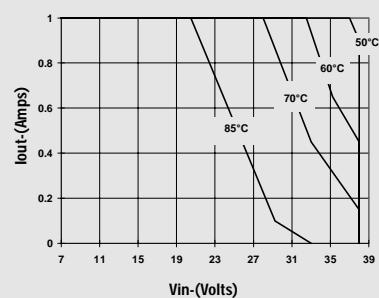
PT5121, 5.0 VDC (See Note 1)



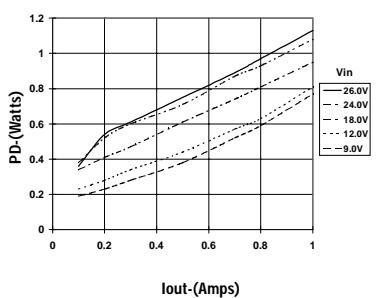
Ripple vs Output Current



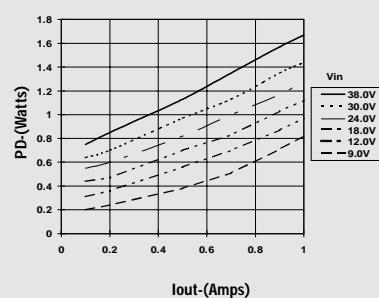
Ripple vs Output Current

Thermal Derating ( $T_a$ ) (See Note 2)Thermal Derating ( $T_a$ ) (See Note 2)

Power Dissipation vs Output Current



Power Dissipation vs Output Current



**Note 1:** All data listed in the above graphs, except for derating data, has been developed from actual products tested at 25°C. This data is considered typical data for the ISR.

**Note 2:** Thermal derating graphs are developed in free air convection cooling of 40-60 LFM. (See Thermal Application Notes.)

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